



Alumina-Silica Type ECO-27

General Information

ZIRCAR Ceramics' Alumina-Silica Type ECO-27 is a medium-density utility grade of refractory ceramic fiber (RCF) insulation board suitable for use to 1260°C (2300°F). ECO-27's density and strength is achieved through the use of clay and shot as fillers along with its high-purity amorphous (colloidal) silica binders. It is manufactured in two grades.

ECO-27A contains a few percent organic binder which aids in room temperature handleability and machinability. This organic binder begins to decompose at approximately 200°C (392°F). Firing to 600°C (1112°F) will remove all of its organic binder along with its chemically-combined water.

ECO-27B has had its organic binder burned out and is organic-free.

Both grades offer low thermal conductivity, excellent thermal shock resistance and are effective thermal insulators in numerous thermal process systems.

ECO-27 exhibits excellent resistance to chemical attack and is not affected by oil or water. It is, however, affected by hydrofluoric acid, phosphoric acid and strong alkalis.



Characteristics & Properties

| Type | ECO-27A | ECO-27B |
|--|--------------|-----------|
| Color | Off White | |
| Typical Composition, % | | |
| Al ₂ O ₃ | 33 | 35 |
| SiO ₂ | 61 | 64 |
| Other Metal Oxides, % | 1 | |
| Organic Content, % | 5 | 0 |
| Bulk Density, g/cc (pcf) | 0.43 (27) | 0.41 (26) |
| Loss On Ignition, % | 5 | 0 |
| Specific Heat, BTU/lb°F (J/kg°K) @ 2000°F | 0.284 (1190) | |
| Maximum Use Temperature*, °C (°F) | 1260 (2300) | |
| Linear Shrinkage‡, % | | |
| 24 hrs at 760°C (1400°F) | 0.5 | |
| 24 hrs at 1000°C (1832°F) | 2.5**, 3.5‡ | |
| 24 hrs at 1200°C (2192°F) | 4.0**, 6.0‡ | |
| Compressive Strength**, MPa (psi) at 10% compression | 0.34 (50) | 0.15 (22) |

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Characteristics & Properties Continued

| | | |
|--|--------------|------------|
| Flexural Strength**, MOR at room temp., MPa (psi) | | |
| as received | 1.98 (300) | 1.15 (175) |
| 24 hrs at 1260°C (2300°F) | 0.82 (125) | |
| Thermal Conductivity**, W/mK (BTU/ft ² °F/in) | | |
| 200°C (392°F) | 0.055 (0.48) | |
| 600°C (1112°F) | 0.13 (0.98) | |
| 1000°C (1832°F) | 0.23 (1.54) | |

The data presented herein is intended to help the user to determine the appropriateness of this material for their application.

This data is a nominal representation of this product's properties and characteristics and therefore should not be used in preparing specifications.

* Maximum use temperature is dependent on variables such as stresses, both thermal and mechanical, and the chemical environment that the material experiences. ** Properties expressed parallel to thickness. ‡ Properties expressed perpendicular to thickness.

Suggested Applications

Primary thermal insulation in low-mass furnaces and thermal process systems operating to 1260°C (2300°F).

Backup thermal insulation in furnaces and thermal process systems operating to high temperatures.

Expansion joints in gunned refractories.

Furnace and kiln flue and chimney linings.

Combustion chamber liners, baffles and muffles.

General thermal insulation in a number of foundry applications.

High-temperature setters, supports and process fixtures.

Electrical insulation in systems operating at elevated temperatures.

Thermal insulation in hot appliances.

Availability -

As ECO-27 boards are primarily used as feedstock for custom CNC machined components, full-size standard boards are stocked in limited quantity. Shown in the table below are item numbers and descriptions for four such feedstock boards.

| ITEM # | DESCRIPTION |
|---------|----------------------------|
| D149-01 | ECO-27A, 24"W x 36"L x 1"T |
| D149-02 | ECO-27A, 24"W x 36"L x 2"T |
| A150-01 | ECO-27B, 24"W x 36"L x 1"T |
| A150-02 | ECO-27B, 24"W x 36"L x 2"T |

To Order

Standard boards: Order online or Contact ZIRCAR Ceramics' Sales Department and provide quantity, item # and description. Availability and price will be provided.

Standard tolerances for boards are +/- 1/4" on length and width and +/- 1/8" on thickness.

Custom shapes: Our state-of-the-art tight-tolerance machining techniques allow a wide variety of sizes and shapes to be made.

Surface treatments including rigidization with colloidal alumina (AL-R/H) or colloidal silica (SI-RIG) or coating with alumina cement (AL-CEM) are all available.



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